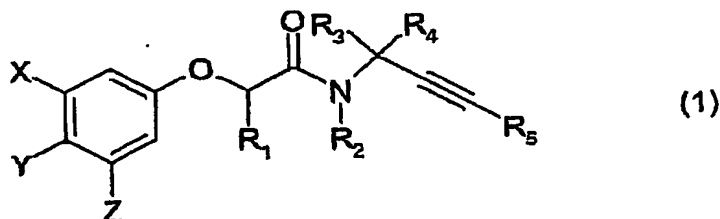


CLAIMS

1. A compound of the general formula (1):



wherein

X, Y and Z are independently H, halogen, C₁₋₄ alkyl, halo(C₁₋₄)alkyl, C₂₋₄ alkenyl, halo(C₂₋₄)alkenyl, C₂₋₄ alkynyl, halo(C₂₋₄)alkynyl, C₁₋₄ alkoxy, halo(C₁₋₄)alkoxy, -S(O)_n(C₁₋₄)alkyl where n is 0, 1 or 2 and the alkyl group is optionally substituted with fluoro, -OSO₂(C₁₋₄)alkyl where the alkyl group is optionally substituted with fluoro, cyano, nitro, C₁₋₄ alkoxycarbonyl, -CONR'R'', -COR', -NR'COR'' or -NR'COOR''' where R' and R'' are independently H or C₁₋₄ alkyl and R''' is C₁₋₄ alkyl, provided that at least one of X and Z is other than H;

R₁ is C₁₋₄ alkyl, C₂₋₄ alkenyl or C₂₋₄ alkynyl in which the alkyl, alkenyl and alkynyl groups are optionally substituted on their terminal carbon atom with one, two or three halogen atoms, with a cyano group, with a C₁₋₄ alkylcarbonyl group, with a C₁₋₄ alkoxycarbonyl group or with a hydroxy group;

R₂ is H, C₁₋₄ alkyl, C₁₋₄ alkoxymethyl or benzyloxymethyl in which the phenyl ring of the benzyl moiety is optionally substituted with C₁₋₄ alkoxy;

R₃ and R₄ are independently H, C₁₋₃ alkyl, C₂₋₃ alkenyl or C₂₋₃ alkynyl provided that both are not H and that when both are other than H their combined total of carbon atoms does not exceed 4, or

R₃ and R₄ join with the carbon atom to which they are attached to form a 3 or 4 membered carbocyclic ring optionally containing one O, S or N atom and optionally substituted with halo or C₁₋₄ alkyl; and

R₅ is unsubstituted C₃₋₄ alkyl, unsubstituted C₃₋₆ cycloalkyl or C₁₋₄ alkyl or C₃₋₆ cycloalkyl in which the alkyl and cycloalkyl groups are substituted with halo, hydroxy, C₁₋₆ alkoxy, cyano, C₁₋₄ alkylcarbonyloxy, aminocarbonyloxy, mono- or di(C₁₋₄)alkylaminocarbonyloxy, -S(O)_n(C₁₋₆)alkyl where n is 0, 1 or 2, triazolyl, tri(C₁₋₄)alkylsilyloxy, optionally substituted phenoxy, optionally substituted

thienyloxy, optionally substituted benzyloxy or optionally substituted thienylmethoxy, in which the optionally substituted phenyl and thienyl rings of phenoxy, thienyloxy, benzyloxy and thienylmethoxy are optionally substituted with one, two or three substituents selected from halo, hydroxy, mercapto, C₁₋₄ alkyl, C₂₋₄ alkenyl, C₂₋₄ alkynyl, C₁₋₄ alkoxy, C₂₋₄ alkenyloxy, C₂₋₄ alkynyloxy, halo(C₁₋₄)-alkyl, halo(C₁₋₄)alkoxy, C₁₋₄ alkylthio, halo(C₁₋₄)alkylthio, hydroxy(C₁₋₄)alkyl, C₁₋₄ alkoxy(C₁₋₄)alkyl, C₃₋₆ cycloalkyl, C₃₋₆ cycloalkyl(C₁₋₄)alkyl, phenoxy, benzyloxy, benzoyloxy, cyano, isocyano, thiocyanato, isothiocyanato, nitro, -NR^mRⁿ, -NHCOR^m, -NHCONR^mRⁿ, -CONR^mRⁿ, -SO₂R^m, -OSO₂R^m, -COR^m, -CR^m=NRⁿ or -N=CR^mRⁿ, in which R^m and Rⁿ are independently hydrogen, C₁₋₄ alkyl, halo(C₁₋₄)alkyl, C₁₋₄ alkoxy, halo(C₁₋₄)alkoxy, C₁₋₄ alkylthio, C₃₋₆ cycloalkyl, C₃₋₆ cycloalkyl(C₁₋₄)alkyl, phenyl or benzyl, the phenyl and benzyl groups being optionally substituted with halogen, C₁₋₄ alkyl or C₁₋₄ alkoxy, with the proviso that where X, Y, Z, R₁ and R₂ are H, R₃ is Me and R₄ is 2-methylprop-1-yl, R₅ is not but-2-yl.

2. A compound according to claim 1 wherein X, Y and Z are all chloro or methyl, or X and Z are both chloro or bromo and Y is H or methyl, or X and Z are both methyl or methoxy and Y is H, chloro, bromo or alkylthio, or X is methoxy, Y is H and Z is cyano or chloro, or X is methyl, Y is H and Z is ethyl, or X is chloro, bromo or trifluoromethyl and both Y and Z are H.

3. A compound according to claim 1 or 2 wherein R₁ is methyl, ethyl, *n*-propyl, 2,2,2-trifluoromethyl, cyanomethyl, acetylmethyl, methoxycarbonylmethyl, methoxycarbonylethyl, hydroxymethyl, hydroxyethyl.

4. A compound according to claim 1 or 2 wherein R₁ is ethyl.

5. A compound according to any one of the preceding claims wherein R₂ is H.

6. A compound according to any one of the preceding claims wherein both R₃ and R₄ are methyl.

7. A compound according to any one of the preceding claims wherein R_5 is *n*-propyl, hydroxymethyl, methoxymethyl, 1-methoxyethyl, *tert*-butyldimethylsiloxymethyl, 3-chloropropyl, 3-cyanopropyl, 3-methoxypropyl, 3-(1,2,4-triazol-1-yl)propyl, 3-methylthiopropyl, 3-methanesulphinylpropyl or 3-methanesulphonylpropyl.

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8. A compound according to claim 1 wherein

X, Y and Z are independently H, halogen, C_{1-4} alkyl, halo(C_{1-4})alkyl, C_{2-4} alkenyl, halo(C_{2-4})alkenyl, C_{2-4} alkynyl, halo(C_{2-4})alkynyl, C_{1-4} alkoxy, halo(C_{1-4})alkoxy, $-S(O)_n(C_{1-4})$ alkyl where n is 0, 1 or 2 and the alkyl group is optionally substituted with fluoro, $-OSO_2(C_{1-4})$ alkyl where the alkyl group is optionally substituted with fluoro, cyano, nitro, C_{1-4} alkoxycarbonyl, $-CONR'R''$, $-COR'$ or $-NR'COR''$ where R' and R'' are independently H or C_{1-4} alkyl, provided that at least one of X and Z is other than H;

R_1 is C_{1-4} alkyl, C_{2-4} alkenyl or C_{2-4} alkynyl in which the alkyl, alkenyl and alkynyl groups are optionally substituted on their terminal carbon atom with one, two or three halogen atoms, with a cyano group, with a C_{1-4} alkylcarbonyl group, with a C_{1-4} alkoxycarbonyl group or with a hydroxy group;

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R_2 is H, C_{1-4} alkyl, C_{1-4} alkoxymethyl or benzyloxymethyl in which the phenyl ring of the benzyl moiety is optionally substituted with C_{1-4} alkoxy;

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R_3 and R_4 are independently H, C_{1-3} alkyl, C_{2-3} alkenyl or C_{2-3} alkynyl provided that both are not H and that when both are other than H their combined total of carbon atoms does not exceed 4, or

R_3 and R_4 join with the carbon atom to which they are attached to form a 3 or 4 membered carbocyclic ring optionally containing one O, S or N atom and

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optionally substituted with halo or C_{1-4} alkyl; and

R_5 is C_{1-4} alkyl or C_{3-6} cycloalkyl in which the alkyl and cycloalkyl groups are substituted with hydroxy, C_{1-6} alkoxy, C_{1-6} alkylthio, tri(C_{1-4})alkylsilyloxy,

optionally substituted phenoxy, optionally substituted thienyloxy, optionally substituted benzyloxy or optionally substituted thienylmethoxy, in which the

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optionally substituted phenyl and thienyl rings of phenoxy, thienyloxy, benzyloxy and thienylmethoxy are optionally substituted with one, two or three substituents selected from halo, hydroxy, mercapto, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{1-4} alkoxy, C_{2-4} alkenyloxy, C_{2-4} alkynyloxy, halo(C_{1-4})alkyl, halo(C_{1-4})alkoxy, C_{1-4}

alkylthio, halo(C₁₋₄)alkylthio, hydroxy(C₁₋₄)alkyl, C₁₋₄alkoxy(C₁₋₄)alkyl, C₃₋₆ cycloalkyl, C₃₋₆ cycloalkyl(C₁₋₄)alkyl, phenoxy, benzyloxy, benzoyloxy, cyano, isocyano, thiocyanato, isothiocyanato, nitro, -NR^mRⁿ, -NHCOR^m, -NHCONR^mRⁿ, -CONR^mRⁿ, -SO₂R^m, -OSO₂R^m, -COR^m, -CR^m=NRⁿ or -N=CR^mRⁿ, in which R^m and Rⁿ are independently hydrogen, C₁₋₄ alkyl, halo(C₁₋₄)alkyl, C₁₋₄ alkoxy, halo(C₁₋₄)alkoxy, C₁₋₄ alkylthio, C₃₋₆ cycloalkyl, C₃₋₆ cycloalkyl(C₁₋₄)alkyl, phenyl or benzyl, the phenyl and benzyl groups being optionally substituted with halogen, C₁₋₄ alkyl or C₁₋₄ alkoxy.

9. A compound according to claim 1 wherein X, Y and Z are all chloro or methyl, or X and Z are both chloro or bromo and Y is H or methyl, or X and Z are both methyl or methoxy and Y is H, chloro, bromo or alkylthio, or X is methoxy, Y is H and Z is cyano or chloro, or X is methyl, Y is H and Z is ethyl, or X is chloro, bromo or trifluoromethyl and both Y and Z are H; R₁ is methyl, ethyl, *n*-propyl, 2,2,2-trifluoromethyl, cyanomethyl, acetylmethyl, methoxycarbonylmethyl, methoxycarbonylethyl, hydroxymethyl or hydroxyethyl; R₂ is H; R₃ and R₄ are both methyl; and R₅ is hydroxymethyl, methoxymethyl, 1-methoxyethyl, *tert*-butyldimethylsiloxyethyl, 3-chloropropyl, 3-cyanopropyl, 3-methoxypropyl, 3-(1,2,4-triazol-1-yl)propyl, 3-methylthiopropyl, 3-methanesulphinypropyl or 3-methanesulphonylpropyl. Preferably R₁ is ethyl. Preferably R₅ is methoxymethyl or 3-cyanopropyl.

10. A fungicidal composition comprising a fungicidally effective amount of a compound of the general formula (I) wherein
- X, Y and Z are independently H, halogen, C₁₋₄ alkyl, halo(C₁₋₄)alkyl, C₂₋₄ alkenyl, halo(C₂₋₄)alkenyl, C₂₋₄ alkynyl, halo(C₂₋₄)alkynyl, C₁₋₄ alkoxy, halo(C₁₋₄)alkoxy, -S(O)_n(C₁₋₄)alkyl where n is 0, 1 or 2 and the alkyl group is optionally substituted with fluoro, -OSO₂(C₁₋₄)alkyl where the alkyl group is optionally substituted with fluoro, cyano, nitro, C₁₋₄ alkoxycarbonyl, -CONR'R'', -COR', -NR'COR'' or -NR'COOR''' where R' and R'' are independently H or C₁₋₄ alkyl and R''' is C₁₋₄ alkyl, provided that at least one of X and Z is other than H;
- R₁ is C₁₋₄ alkyl, C₂₋₄ alkenyl or C₂₋₄ alkynyl in which the alkyl, alkenyl and alkynyl groups are optionally substituted on their terminal carbon atom with one, two or

three halogen atoms, with a cyano group, with a C₁₋₄ alkylcarbonyl group, with a C₁₋₄ alkoxy carbonyl group or with a hydroxy group;

R₂ is H, C₁₋₄ alkyl, C₁₋₄ alkoxymethyl or benzyloxymethyl in which the phenyl ring of the benzyl moiety is optionally substituted with C₁₋₄ alkoxy;

R₃ and R₄ are independently H, C₁₋₃ alkyl, C₂₋₃ alkenyl or C₂₋₃ alkynyl provided that both are not H and that when both are other than H their combined total of carbon atoms does not exceed 4, or

R₃ and R₄ join with the carbon atom to which they are attached to form a 3 or 4 membered carbocyclic ring optionally containing one O, S or N atom and

optionally substituted with halo or C₁₋₄ alkyl; and

R₅ is unsubstituted C₃₋₆ alkyl, unsubstituted C₃₋₆ cycloalkyl or C₁₋₄ alkyl or C₃₋₆ cycloalkyl in which the alkyl and cycloalkyl groups are substituted with halo, hydroxy, C₁₋₆ alkoxy, cyano, C₁₋₄ alkylcarbonyloxy, aminocarbonyloxy, mono- or di(C₁₋₄)alkylaminocarbonyloxy, -S(O)_n(C₁₋₆)alkyl where n is 0, 1 or 2, triazolyl, tri(C₁₋₄)alkylsilyloxy, optionally substituted phenoxy, optionally substituted thienyloxy, optionally substituted benzyloxy or optionally substituted thienylmethoxy, in which the optionally substituted phenyl and thienyl rings of phenoxy, thienyloxy, benzyloxy and thienylmethoxy are optionally substituted with one,

two or three substituents selected from halo, hydroxy, mercapto, C₁₋₄ alkyl, C₂₋₄ alkenyl, C₂₋₄ alkynyl, C₁₋₄ alkoxy, C₂₋₄ alkenyloxy, C₂₋₄ alkynyloxy, halo(C₁₋₄)-

alkyl, halo(C₁₋₄)alkoxy, C₁₋₄ alkylthio, halo(C₁₋₄)alkylthio, hydroxy(C₁₋₄)alkyl, C₁₋₄ alkoxy(C₁₋₄)alkyl, C₃₋₆ cycloalkyl, C₃₋₆ cycloalkyl(C₁₋₄)alkyl, phenoxy,

benzyloxy, benzoyloxy, cyano, isocyano, thiocyanato, isothiocyanato, nitro,

-NR^mRⁿ, -NHCOR^m, -NHCONR^mRⁿ, -CONR^mRⁿ, -SO₂R^m, -OSO₂R^m, -COR^m,

-CR^m=NRⁿ or -N=CR^mRⁿ, in which R^m and Rⁿ are independently hydrogen, C₁₋₄ alkyl, halo(C₁₋₄)alkyl, C₁₋₄ alkoxy, halo(C₁₋₄)alkoxy, C₁₋₄ alkylthio, C₃₋₆ cycloalkyl, C₃₋₆ cycloalkyl(C₁₋₄)alkyl, phenyl or benzyl, the phenyl and benzyl groups being optionally substituted with halogen, C₁₋₄ alkyl or C₁₋₄ alkoxy;

and a suitable carrier or diluent therefor.

11. A method of combating or controlling phytopathogenic fungi which comprises applying a fungicidally effective amount of a compound of the general formula (1) wherein

X, Y and Z are independently H, halogen, C₁₋₄ alkyl, halo(C₁₋₄)alkyl, C₂₋₄ alkenyl, halo(C₂₋₄)alkenyl, C₂₋₄ alkynyl, halo(C₂₋₄)alkynyl, C₁₋₄ alkoxy, halo(C₁₋₄)alkoxy, -S(O)_n(C₁₋₄)alkyl where n is 0, 1 or 2 and the alkyl group is optionally substituted with fluoro, -OSO₂(C₁₋₄)alkyl where the alkyl group is optionally substituted with fluoro, cyano, nitro, C₁₋₄ alkoxycarbonyl, -CONR'R", -COR', -NR'COR" or -NR'COOR" where R' and R" are independently H or C₁₋₄ alkyl and R" is C₁₋₄ alkyl, provided that at least one of X and Z is other than H;

R₁ is C₁₋₄ alkyl, C₂₋₄ alkenyl or C₂₋₄ alkynyl in which the alkyl, alkenyl and alkynyl groups are optionally substituted on their terminal carbon atom with one, two or three halogen atoms, with a cyano group, with a C₁₋₄ alkylcarbonyl group, with a C₁₋₄ alkoxycarbonyl group or with a hydroxy group;

R₂ is H, C₁₋₄ alkyl, C₁₋₄ alkoxymethyl or benzyloxymethyl in which the phenyl ring of the benzyl moiety is optionally substituted with C₁₋₄ alkoxy;

R₃ and R₄ are independently H, C₁₋₃ alkyl, C₂₋₃ alkenyl or C₂₋₃ alkynyl provided that both are not H and that when both are other than H their combined total of carbon atoms does not exceed 4, or

R₃ and R₄ join with the carbon atom to which they are attached to form a 3 or 4 membered carbocyclic ring optionally containing one O, S or N atom and optionally substituted with halo or C₁₋₄ alkyl; and

R₅ is unsubstituted C₃₋₄ alkyl, unsubstituted C₃₋₆ cycloalkyl or C₁₋₄ alkyl or C₃₋₆ cycloalkyl in which the alkyl and cycloalkyl groups are substituted with halo, hydroxy, C₁₋₆ alkoxy, cyano, C₁₋₄ alkylcarbonyloxy, aminocarbonyloxy, mono- or di(C₁₋₄)alkylaminocarbonyloxy, -S(O)_n(C₁₋₆)alkyl where n is 0, 1 or 2, triazolyl, tri(C₁₋₄)alkylsilyloxy, optionally substituted phenoxy, optionally substituted thienyloxy, optionally substituted benzyloxy or optionally substituted thienylmethoxy, in which the optionally substituted phenyl and thienyl rings of phenoxy, thienyloxy, benzyloxy and thienylmethoxy are optionally substituted with one, two or three substituents selected from halo, hydroxy, mercapto, C₁₋₄ alkyl, C₂₋₄ alkenyl, C₂₋₄ alkynyl, C₁₋₄ alkoxy, C₂₋₄ alkenyloxy, C₂₋₄ alkynyloxy, halo(C₁₋₄)alkyl, halo(C₁₋₄)alkoxy, C₁₋₄ alkylthio, halo(C₁₋₄)alkylthio, hydroxy(C₁₋₄)alkyl, C₁₋₄ alkoxy(C₁₋₄)alkyl, C₃₋₆ cycloalkyl, C₃₋₆ cycloalkyl(C₁₋₄)alkyl, phenoxy, benzyloxy, benzoyloxy, cyano, isocyano, thiocyanato, isothiocyanato, nitro, -NR^mRⁿ, -NHCOR^m, -NHCONR^mRⁿ, -CONR^mRⁿ, -SO₂R^m, -OSO₂R^m, -COR^m,

-CR^m=NRⁿ or -N=CR^mRⁿ, in which R^m and Rⁿ are independently hydrogen, C₁₋₄ alkyl, halo(C₁₋₄)alkyl, C₁₋₄ alkoxy, halo(C₁₋₄)alkoxy, C₁₋₄ alkylthio, C₃₋₆ cycloalkyl, C₃₋₆ cycloalkyl(C₁₋₄)alkyl, phenyl or benzyl, the phenyl and benzyl groups being optionally substituted with halogen, C₁₋₄ alkyl or C₁₋₄ alkoxy;
5 or a composition according to claim 10 to a plant, to a seed of a plant, to the locus of the plant or seed or to soil or any other plant growth medium.